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ABSTRACT

This booklet is intended to aid classroom teachers in implementing the accountability model developed by the Michigan Department of Education. The authors discuss and provide examples of each of the accountability model's six steps--1) identification of goals, 2) performance objectives, 3) assessment of needs, 4) analysis of delivery systems, 5) evaluation, and 6) recommendations. The organization of the booklet follows the basic structure of the accountability model. Chapter 1 briefly discusses the origin of the accountability model and describes the organization of the booklet. Chapters 2-5 focus in turn on the six steps of the accountability model. Chapter 6 illustrates the use of the accountability model in three different educational settings. (JG)

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ACCOUNTABILITY:

A MANAGEMENT TOOL FOR TEACHERS

ED150690

Prepared for the Michigan
Department of Education

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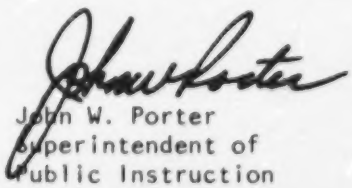
FOREWORD

Accountability is a major force in Michigan education. The purpose of this book is to provide the classroom teachers with a tool for implementing the accountability model in their classrooms. This book is designed to provide examples of each of the six-steps of the State Board's Accountability Model--1) identification of goals, 2) performance objectives, 3) assessment of needs, 4) analysis of delivery systems, 5) evaluation, and 6) recommendations--for classroom teachers who are interested in learning how accountability can work for them in their classrooms.

The idea for the book was conceptualized by two programs within General Education Services--the Experimental and Demonstration Centers Program and the Instructional Specialist Program--to help the staff work with teachers in the many workshops that are conducted around the State. The actual writing was done by Dr. Chauncey Smith of Wayne State University and Dr. Reuben Chapman of the Effective Feedback Incorporated in Ann Arbor.

The book fits into the accountability model as a response to the many teachers who want to provide better management of their classrooms but would like help in determining how it can be done. Thus, in one sense, this is a "how to" book. We are hopeful that teachers who work with Department staff will have excellent guidelines on implementing accountability as a result of using this book.

It should be emphasized that accountability is not for teachers alone. Administrators, parents and local governments must assume responsibility in education accountability. Nonetheless, teachers are clearly one of the critical components to improving the education of children and youth, and this book, we believe, will prove to be a useful and effective tool for teachers.



John W. Porter
Superintendent of
Public Instruction

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CHAPTER I

THE BEGINNING

This book is about accountability as a process for classroom teachers in Michigan's elementary and secondary schools. Accountability in the classroom to improve student learning is the emphasis. The book was written for teachers who:

1. must develop or select performance objectives for their own classroom or school;
2. are asked to respond to the results of the Michigan Assessment and school board directives at the classroom level;
3. wish to write a proposal for state or Federal funds;
4. want to evaluate their own work or respond to evaluations that may be made of their work;
5. desire an overall picture of accountability and what it means for the work of the classroom teacher.

However all teachers interested in improving learning in their classroom will find this book useful. The examples in this book illustrating points have been supplied by a variety of Michigan teachers and cover areas ranging from student motivation and forgetting to increasing teacher efficiency in writing performance objectives and test items.

This book only discusses accountability at the classroom level. That is, only those topics that make a difference in student learning

and can be managed independently by a teacher are covered. Factors out of the control of an individual teacher are not included.

Nevertheless for accountability to have the positive effects it should, there must be accountability procedures building-wide, district-wide and at all levels affecting learners. Accountability is not for teachers alone.

To develop this notion of the accountability process for individual teachers, draft versions of this book have been tried in several college courses, with pre-service and in-service teachers, and during in-service workshops conducted by the Department of Education. This final version represents the ideas, examples, and work contributed by those first readers.

Teacher Remarks Favoring Accountability

These are comments made by Michigan teachers currently practicing accountability.

"I can manage my own time better. There is less homework for me".

"I have more precise information to give parents about their children's progress. I can enlist their aid exactly where it's needed".

"The students are getting more useful information from me about what's required of them".

"Motivation, including my own, has increased. We know where we are going and that if one plan falls through, it is appropriate to try another".

"The principal is much more supportive of my work because it's easy to tell him what I'm doing and where I am".

Comments such as these led to the writing of this book. Its purpose is to share the benefits from using a particular model of educational accountability.

Educational Accountability in Michigan Classrooms

The Michigan Department of Education has developed a model for the accountability process in public education. It has six steps: identification of goals, development of performance objectives, assessment of needs, analysis of delivery systems, evaluation and recommendations. For practical classroom purposes this model is a set of questions. This text will teach you to develop answers to the following six sets of questions:

1. IDENTIFICATION OF GOALS - What broad goals should be defined? What should these youngsters be like as a result of going to school in our district?

2. PERFORMANCE OBJECTIVES - What should the children know? What should they be able to do? How will we recognize when they have done it?

3. ASSESSMENT OF NEEDS - What can our students do now? What is the gap between what we said they ought to accomplish and what they are presently accomplishing?

4. ANALYSIS OF DELIVERY SYSTEMS - What combinations of resources are necessary to "close the gap" to realize our stated objectives and goals? What teaching methods, materials, facilities, staffing, and professional training must be marshalled to meet the objectives?

5. EVALUATION - What worked? What failed? Specifically, what elements of the delivery system contributed to the realized objectives?

6. RECOMMENDATIONS - What new priorities must be established? How can the improvements be perpetuated into future years on a cost-effective basis? Are new delivery systems needed?

Accountability applies to many aspects of instruction and learning because it is a way to use information about education to improve education. In the short run - a lesson or unit - it helps teachers and students focus attention on the task, monitor progress during learning and make revisions to ensure success. In the long run - a course, curriculum, or school planning - it helps in setting goals,

defining programs, assigning responsibility for acting, documenting results, and using the evaluation of programs to decide on better programs in the future.

If accountability is interpreted as "laying blame where it belongs" it is a failure. Accountability must help improve learning in daily instruction and in the school program over the years. We don't need more proof that the goals of education are difficult to achieve with every child and citizen. We need to find better ways to get on with the work and do it.

The Design of This Book

Three guidelines were followed in writing this book:

1. All suggestions have grown out of techniques teachers are currently using in Michigan classrooms.
2. The examples are from actual classroom situations.
3. The book is not for armchair reading. Examples and principles are followed by application. You will learn how to perform each step in the accountability process.

Each chapter begins with a summary and ends with concluding remarks on the important points for the classroom teacher.

Chapters II, III, IV, and V cover the steps in the process of accountability. The final chapter, Chapter VI, illustrates this process applied in three different educational settings.

CHAPTER II

IDENTIFICATION OF GOALS AND WRITING PERFORMANCE OBJECTIVES

→ I. Identification og Goals

→ II. Performance Objectives

III. Assessment of Needs

IV. Analysis of Delivery Systems

V. Evaluation

VI. Recommendations

Summary

In this chapter two steps in the accountability process are discussed: Identification of Goals and Performance Objectives. Since the classroom teacher becomes actively and practically involved with accountability at Step II where performance objectives are written, the major thrust of the chapter is toward writing performance objectives. However, because a performance objective relates directly to a common or local goal, the chapter begins with a discussion of that relationship.

Identification of Goals

Goals are statements of direction in general terms. For example, the common goals of Michigan Education have been grouped into three principal areas: (1) citizenship and morality, (2) democracy and equal

opportunity, and (3) student learning. The pamphlet entitled The Common Goals of Michigan Education published by the Michigan Department of Education identifies goals in these three areas and explains how they were developed.

Since goals are described in general terms, further definition must occur at the local level - district, building, and classroom. Further definition is accomplished by describing the performance objectives that relate to the goals. This is done at the local level (e.g., by the classroom teacher) to insure that performance objectives meet the unique needs of citizens as well as insuring equal opportunity for all.

Therefore, a goal is a statement of priority, policy and general direction and performance objectives are the details in terms of student behavior that comprise a goal. The remainder of this chapter describes performance objectives and how to write them.

Performance Objectives Defined

Performance objectives are the answers to these questions:

What should the children know?
What should they be able to do?
How will we recognize the outcome?

This a goal:

At the end of their schooling, students will like classical music well enough to seek occasions to hear compositions which are new to them.

This is one of many performance objectives related to that goal:

By the end of the unit of study, the students will have responded positively toward classical music as indicated by 80% of the students having borrowed at least one classical record from the school library. The measurement will be library check-out slips.

Here's another classroom level performance objective:

Upon completion of the sixth grade, students at Jones Elementary School, will on the average, demonstrate a 6.1 grade level equivalency score in reading comprehension as indicated by the aggregate score of the Beta Oral Test of Reading Achievement, Form M, Level 2.

And here's the goal it relates to:

When students leave Jones Elementary School they will comprehend literature.

This is a goal:

Each student shall have the ability to handle mathematical operations and concepts.

This is one of its performance objectives written by the classroom teacher:

Third grade students at Jones Elementary School will develop knowledge of mathematics by June 1, 1972 as indicated by their ability to obtain an average score of 50 on the mathematics sub-test of the New Omega Mathematics Inventory.

Performance objectives contain much more information than goals and more than one performance objective may be relevant to a borad goal statement. Performance objectives give very specific information about the behaviors that comprise a goal.

Elements of Performance Objectives

There are six important elements in a performance objective:

1. Performer
2. Behavior
3. Object of the Behavior
4. Time
5. Measure
6. Criterion

Analyzing the Jones School mathematics example we find:

1. The performer: "Third grade students at Jones Elementary School..."
2. The behavior: "...will develop knowledge..."
3. The object: "...of mathematics..."
4. The time: "...by June 1, 1972..."
5. The measure: "...the mathematics sub-test of the New Omega Mathematics Inventory..."
6. The criterion: "...an average score of 50..."

Now compare the parts of a performance objective with those found in the following goal:

> Each student shall have the ability to handle mathematical operations and concepts.

The performer: (Could be any students in American education, so there is a need to be more specific.)

The behavior: "...ability to handle..." (not sure what handle means)

The object: "...mathematical operations and concepts..."

The time: (no information)

The measure: (no information)

The criterion: (no information)

The elements of a performance objective are defined below.

The performer. The individual or individuals who will be involved in the instructional task. This might be a single student or an entire class or school. We will call this element WHO.

The behavior to be demonstrated. We will want to determine what it is the performer is to do - complete, comprehend, leap, construct, etc. This is the HOW element.

The object of the behavior. This may be characterized as the WHAT element. In other words, are we specifying electronics, French, mathematics or composition?

Time. This establishes WHEN. It might be expressed as a future date, number of days or months, or in terms of a necessary prerequisite to another level or phase.

How Measured. Here the techniques are described for verifying that the objective has been met. This might be a standardized instrument, a teacher-made test, an observational check list or any other way to record or judge performance.

How Well. The criterion for success relative to the objective. This is the element of proficiency or degree of accomplishment.

Here is another performance objective using WHO, HOW, WHAT and WHEN to label its parts:

WHO: My 12th grade English literature students...

HOW: ...will be able to pronounce...

WHAT: ...the words in the first 42 lines of Canterbury Tales...

WHEN: ...after working through a programmed lesson that I developed...

How Measured: student will record his performance; I will sample ten 5-second segments from the tape and compare them against a tape made by an "expert" in Middle English; my judgments will be corroborated by a colleague through random listenings by him. We must agree 95% of the time.

How Well: Success will be determined by 95% correct pronunciation of whole words.

Exercises

Now you can begin developing performance objectives to use in your own classroom. The next few pages contain exercises that will aid you in writing each part of a good performance objective.

Keep a tablet handy as you work on these exercises. As you begin to understand each part of the performance objective, begin jotting down some examples that will eventually be useful in your own classroom. Each successive exercise will add another element to the performance objective: you should do the same with the examples on your tablet. Do not try for perfection the first time; that will come with practice.

A way to ease the task of developing performance objectives is to work with a colleague. You can probe each other for specific information and check each other's work against the checklist on page 21.

A good performance objective describes:

→ WHO the performer is.

Thus phrase A is better than phrase B.

A "The fifth grade students who score below 50 on...."

B "The poorer students...."

Decide which phrase in each pair best describes WHO the performer is. Indicate your choice with a check mark (✓).

	A	B
1.	"My students..."	"All of my 6th grade students..."
2.	"The students passing the basic 700 word vocabulary exam in French..."	"Those who speak fluent beginning French..."
3.	"All students taking music appreciation courses during this year..."	"Students enrolled in Middlesex High School music appreciation courses..."

Answers

	A	B
1.		✓
2.	✓	
3.		✓

Comment on the Exercises and Answers: The reason for describing WHO is to focus attention on the students you will actually teach and note their characteristics which make a difference for instruction. You have given enough information when an "outsider" could locate the performers. Exercise #1 is exaggerated...but "All of my 6th grade students...," leaves no doubt who the performers are. In #2 the performer is defined in explicit terms "...(passed) the basic 700 word vocabulary exam..." And #3 identifies a specific group of performers by school name.

A good performance objective describes:

1. WHO the performer is.
2. → HOW the performer is to behave.

Thus phrase A is better than phrase B.

A "...will recite...."

B "...and will know...."

Decide which phrase in each pair best describes HOW the performer is to behave. Indicate your choice with a check mark (✓).

	A	B
1.	"...will appreciate 19th Century English literature..."	"...will read three 19th Century English novels on their own..."
2.	"...will be knowledgeable in the area of constitutional monarchies and able to understand the various power bases within such a system..."	"...will construct a flow diagram of constitutional monarchies and give examples to indicate 3 different ways decisions can be forced..."
3.	"...will describe the critical content of three works of Hemingway..."	"... will be able to complete the work required to enter the fifth grade by June..."

Answers

	A	B
1.		✓
2.		✓
3.	✓	

Comment on the Exercises and Answers: In describing HOW the performer is to behave, it is important that enough information be given so that an outsider could walk into your classroom and find the student who is behaving. In exercise #1, you cannot see the performer "appreciating" but you could see him reading. As with many terms, "appreciating" will mean different things to many people and in most instances mean more than the one element, "read on their own" in our example. In example #3 we feel that "...describing critical content...," is more explicit than "...completing the work required..." "Completing work" is a broad statement that could mean any of a variety of activities but "describing" usually means writing or talking. Can you make the example even more explicit?

A good performance objective describes:

1. WHO the performer is.
2. HOW the performer is to behave.
3. → WHAT the object of behavior is.

Thus phrase A is better than phrase B.

A "...will plan and design institutional advertisement as measured by...."

B "...will plan and design as measured by...."

Decide which phrase in each pair best answers the question: "What is the object of the behavior?" Indicate your choice with a check mark (✓).

	A	B
1.	"...will respond positively to contemporary short stories..."	"...and will be able to comprehend the meaning as indicated...."
2.	"...will synthesize the elements of Moby Dick and	"...will value and respond favorably when requested...."
3.	"...will imitate and then manipulate before the end of the course...."	"...will imitate my rendition of the poem, 'My Butterfly'...."

Answers

	A	B
1.	✓	
2.	✓	
3.		✓

Comment on the Exercises and Answers: In describing the object of the behavior you are indicating into what specific subject area or part of a subject area the student is putting his energy. In exercise #1, "meaning" seems to be an object but it is not nearly as explicit as, "short story." As you are probably beginning to see, one of the most important variables in good performance objectives is the explicitness of the language used to describe each element. This precision is essential for classroom objectives and objectives for the individual student.

A good performance objective describes:

1. WHO the performer is.
2. HOW the performer is to behave.
3. WHAT the object of behavior is.
4. → WHEN the behavior is to occur.

Thus performance objective A is better than performance objective B.

A "By the end of December Johnny Marsh will demonstrate a 10% increase in his accuracy of word pronunciation while reading aloud as measured by the student teacher counting correct pronunciations."

B "Susan May will comprehend the impact of the representative form of government demonstrated by her ability to write a description of the effect constraints have on representatives. Criterion will be the inclusion of at least one example from the daily newspaper."

Decide which phrase in each pair best describes WHEN the behavior is to be performed. Indicate your choice with a check mark (✓).

	A	B
1.	"By the end of the first semester...."	"All senior high students who complete the course...."
2.	"...will imitate correctly before going on to the section that covers production...."	"...all primary grade pupils will eventually develop cognitive skills in reading as indicated by a score no lower than...."
3.	"In order to graduate, students must take the following...."	"Before using the auto-tutor, students must pass the entrance exam in...."

Answers

	A	B
1.	✓	
2.	✓	
3.		✓

Comment on the Exercises and Answers: WHEN the behavior is to be performed may refer to real time, "...by the end of the first semester...," or a sequence, "...pass Unit I with a 100% score before moving to Unit II." The reason for describing the time element is to set the performance objective in a frame of action. If performance objectives are to be used, they should be part of ongoing programs involving reasonable deadlines and appropriate sequential relations among performance objectives.

A good performance objective describes:

1. WHO the performer is.
2. HOW the performer is to behave.
3. WHAT the object of behavior is.
4. WHEN the behavior is to occur.
5. → HOW the behavior will be MEASURED.

Thus performance objective A is better than B.

A By the end of Unit X the 11th grade students will be able to construct a flow diagram of a constitutional monarchy and give examples to indicate three different ways decisions can be forced. The flow diagram will be measured against the one made in the text but be fresh examples. Diagram and 4 points must be exact.

B Upon completion of College Prep I, the students will demonstrate note-taking skills by listening to a variety of lecture styles. They must indicate major points and agree with lecturer 90% of the time.

Decide which performance objective in each of the following pairs tells how the behavior will be MEASURED. Indicate your choice with a check mark (✓).

	A	B
1.	"By the end of the term students will have responded positively toward contemporary literature as indicated by 80% of the students having read a review in the New York Times Book Review measured by teacher observation during free reading periods.	"After the unit on 'Everday Uses for Algebra,' the students will respond more positively toward algebra at least 80 out of 100 times."
2.	"At the end of Writing Skills I, the students will be able to write a 200-400 word argument stating under what conditions the Vietnam war might or might not be justified. The teacher will rate arguments with this checklist: (1) appeals to reader's desire for security or desire to help others; (2) modest in claims; (3) ends with a strong statement of the case."	"Before advancing to Argumentative Writing students must be able to write a brief narrative recalling something that happened or they read that brought about a change in their behavior. They must score 100% on this exercise."

3. "Before beginning Part IV my students must demonstrate their understanding of the major systems and parts of the human body by preparing a brief paper which must be at least 90% accurate."

"At the end of this primary science unit students will demonstrate that they can collect, record and present information in tabular or graphic form. They will choose one of the following newspaper areas: weather, temperature, stock market item, traffic accidents. Their data must agree 100% with the teacher's tabulation of the same data."

Answers

	A	B
1.	✓	
2.	✓	
3.		✓

Comment on the Exercises and Answers: How you collect information-measure - is extremely critical, and often the place where good teaching bogs down. Exercise #1A refers to a contemporary and measurable objective but in #1B there is no indication of how the behavior would be measured. In exercise #2A, performance is measured against a checklist which could have also been used for #2B. In exercise #3B there is a measure implied which requires the teacher to carefully read a major portion of the daily newspaper and tabulate data. A lot of work! Can you think of a more practical way of measuring the behavior in #3B?

A good performance objective describes:

1. WHO the performer is.
2. HOW the performer is to behave.
3. WHAT the object of behavior is.
4. WHEN the behavior is to occur.
5. HOW the behavior is to be MEASURED.
6. → HOW WELL the performer is to behave.

Thus performance objective A is better than B.

A "The students in Biology I will be able to do the following at the end of the semester: Use three resources to prepare a written description of the distribution and characteristics of any animal found in the United States. Measurement will be counting the resources referred to and comparison of their paper against the "distribution and characteristic" list prepared by the members of our department. Success will be 95% correct entries."

B "Students in the Science Inquiry Course will, at the end of the term be able to design an experiment in which the following principles of learning are demonstrated: (1) acquisition of an operant response; (2) extinction of an operant response. Results will be self-reported in graphic form for measurement purposes and the teacher will make random observations during the actual experiments."

Decide which phrase in each pair best answers the question HOW WELL? Indicate your choice with a check mark (✓).

	A	B
1.	"...an average score will be acceptable...."	"...four out of the five sub-skills must be performed in 11 minutes...."
2.	"...each student must do at least twice as well as he did at the beginning of the course...."	"Improvement will be measured against entry behavior with each student being his own standard."
3.	"...class will score an average of 525 on the Middlesex High Comprehensive exams."	"...will score well enough to be considered a college prep student."

Answers		
	A	B
1.		✓
2.	✓	
3.	✓	

Comment on Exercises and Answers: It is important that success or HOW WELL, be stated relative to a performance objective. Exercise #1A is unacceptable because HOW WELL is not known until all the scores are in and the average can be calculated. This makes the performance objective unpredictable from the teacher and student point of view and leaves both "directionless." An interesting statement of HOW WELL is used in exercise #2A where the teacher wanted to increase the reading rate for a group of nearly illiterate children. She used an individualized criterion in that each student would double his entry rate. Since the entry rate can be determined, the performance objective is known at the outset unlike #1A. In exercise #2B anything could be considered improvement, so it is unacceptable. The teacher in #3A learned that her last year's students all scored quite low on one section of the school comprehensive exam, getting an average score of less than 500. This year she will give special attention to this area and hence has established a class based criterion of 525.

Concluding Remarks

This chapter has shown the relationship of goals to performance objectives by contrasting the general guidance function of goals and the detailed direction given in a performance objective. Goals without performance objectives would be like driving to a city whose name was familiar but without the aid of a map. On the other hand, a scattered array of performance objectives would resemble dead-end streets and circular drives. Performance objectives are tied together by a common goal.

The last part of this chapter, on writing performance objectives, is the pivot-point for this book and the entire accountability process. A set of written performance objectives will allow a classroom teacher to (1) accurately select or develop tests for needs assessment and evaluation; (2) develop delivery systems appropriate to those objectives; and (3) sort and select from existing locally and commercially prepared delivery systems.

One final benefit that will accrue as you write more and more performance objectives is skill at selecting from those produced by others. You can also modify those that do not exactly meet the Michigan Department of Education standards. To these ends a checklist is included on the next page that specifies the criteria of good performance objectives. Keep it in front of you while writing and selecting your own performance objectives.

CHECKLIST FOR WRITING AND SELECTING PERFORMANCE OBJECTIVES

A good performance objective answers each of the following questions:

1. PERFORMER - Who is the performer?
2. BEHAVIOR - How should the performer behave?
3. OBJECT OF THE BEHAVIOR - What is the object of the behavior?
4. TIME - When should the behavior occur?
5. HOW MEASURED - How is the behavior to be measured?
6. HOW WELL - How well is the performer to behave?

CHAPTER III

ASSESSMENT OF NEEDS

I.	Identification of Goals
II.	Performance Objectives
→ III.	Assessment of Needs
IV.	Analysis of Delivery Systems
V.	Evaluation
VI.	Recommendations

Summary

"Having identified the goals and having articulated the performance objectives . . . it is necessary to assess the existing relationship between them . . . The object is to give some notion of the variance between . . . performance objectives and what the child or children can do". In the very practical sense, a needs assessment is a test given before instruction (or delivery system analysis) to determine which performance objectives the student has already mastered. If a student can demonstrate a portion of the objectives, instruction will be given for the remaining objectives. This chapter is about needs assessment and its relation to educational accountability, its advantages and suggestions on how to get started in your classroom.

Assessment of Needs and Accountability

The first steps in educational accountability, stating common goals and writing performance objectives, indicate where we should aim our educational efforts. Conducting a needs assessment produces information about which objectives have been met by which students. This gives the classroom teacher a picture of what each of his/her students has accomplished and has to accomplish. From the delivery system analysis will come ways to assist students in achieving the necessary performance objectives; and finally, evaluation will indicate if performance objectives were achieved and what changes, if any, need to be made in the delivery system.

Advantages of Needs Assessment

Assessing needs before instruction or modification of the delivery system has several important results for teachers and students.

Disseminating course goals. A needs assessment often takes the form of a test whose items parallel performance objectives for a particular class or subject. These written items can be shown to other teachers, and to administrators and parents as indications of what you are trying to accomplish. In other words, the instrument for needs assessment can let others know about your goals and performance objectives.

Informing students of goals. Imagine that you assessed your students' needs using a test representing your performance objectives. After you had determined which performance objectives they had not yet mastered, each student or group of students could be told exactly what they had to accomplish in the course.

Selecting instruction. Information about each student's prior achievement of performance objectives is essential for indivualizing

instruction. It helps locate the appropriate instructional path for each student. If only one instructional path is offered, you can select those students for whom that path would be appropriate and, perhaps, recommend remedial work or advanced work for the others.

Course outline. You can use a test (or more generally the performance objectives represented by the test) as the basis for an outline or guide for teaching during the year.

Economy. Needs assessment can help determine not only what to teach but also what not to teach. If a pretest shows that most of the students already know certain arithmetic skills, the teacher can use time more effectively to teach new things. In this way, not only do you conserve time, but also the class probably will be better motivated since they will not be bored by material with which they already are familiar.

Needs Assessment in Practice

> The judges in a spelling bee keep track of how many words each contestant spells correctly. The child who spells the most words correctly receives first prize.

Until recently in education most measurement instruments have given relative information as in the spelling bee. That is, we have highly developed means to test students in order to rank them, reject or select them, pass or fail them all based on performance compared to other students. Such measurement is useful in the system of education, especially for administrative purposes. Additionally, there are cases where ranking students serves important educational goals. For instance, if you select tutors to help students learn fine points in French pronunciation, you want those with the most skills. For this, a test which efficiently compares students with each other is needed.

Such measurement often fails to tell the student very much about his own competence since all that he usually knows is that he did a lot

of things wrong (and failed) or did a lot of things right (and passed). It is a gross indication of his ability. Similarly, the teacher gets little information from a grade or a test score. She may know that a student is doing 80% work in arithmetic. But she does not know in any detail why he is scoring 80% nor what the 20% deficiency represents. This means that she cannot adequately assess why the student is somewhat deficient and consequently cannot prescribe any delivery system which will bring him to a desirable level of competence. Now consider the following example:

> The doctor measures the patient's pulse rate and temperature and listens to his breathing through a stethoscope. On the basis of these measurements, the doctor prescribes a particular drug.

A physician determines a person's health and well-being by measuring the current physical condition and comparing the results against standards accepted by the medical profession as indicators of "good health." There are performance objectives for heart rate, blood pressure, respiration and so on. In fact these "medical performance objectives" are as specific and detailed as those you learned to write in Chapter II. If an individual is not achieving one or several of these medical performance objectives, a prescription specific to that illness is made.

Now teachers need tests which are more like the medical example. Most tests in use today provide the kind of information that was derived from the spelling bee example. That is, they indicate how a student is performing relative to other students. In order to practice educational accountability, a different type of testing information is required. Here one needs to know how a student's performance compares with known performance objectives that have been established or selected by the

teacher. Therefore, instead of indicating that a student scores in a certain percentile we would indicate which performance objectives have been mastered and which have not been mastered. Tests that provide this type of information and are useful for needs assessment in the classroom are objective referenced tests.

Objective referenced tests

An objective referenced test, used to show which performance objectives (or sub-parts of performance objectives) have been mastered, emphasizes the content of the test in terms of several items covering each performance objective. Traditional tests are designed to compare students with each other. Therefore a wide range of item difficulty is quite important and fewer items per objective are used. They are selected on their ability to differentiate among students. In contrast, objective referenced tests compare student performance with the performance objective. The shape of the distribution of scores in objective referenced tests used for needs assessment is of little concern. The scores might fall into two blocks, very high and very low. Individual questions would have a uniform level of difficulty for the particular objective they measure.

In certain instances the difference between a traditional achievement test and an objective referenced test may lie only in the way one looks at the data from the same measuring instrument - total score versus component scores, or corrected as right or wrong versus partial credit being given for partial solutions, etc. However, with clear performance objectives written as detailed in Chapter II you can select traditional achievement tests that match those objectives. You can then score these tests for mastery of performance objectives rather

than the traditional relative score. Further, Chapter V has a detailed discussion of constructing your own tests for evaluation of mastery of performance objectives which may also be used for needs assessment.

You may have concluded that the tests and measuring instruments used for assessing needs are similar or identical to those needed for evaluation. This is correct. There is an important difference, though, and it lies in when the instruments are put to use. Needs assessment occurs before instruction and indicates which performance objectives have already been mastered. As will be discussed in detail in Chapter V, evaluation occurs after instruction to determine if performance objectives have been met.

Variety of measures

One can generally assume that needs assessment is accomplished by using an objective referenced measure either developed by the teacher or commercially produced. However there are instances when a simple frequency measure requiring little development effort is appropriate. Consider the following performance objective taken from Chapter II:

> At the end of this primary science unit students will demonstrate that they can collect, record and present information in tabular or graphic form. They will choose one of the following newspaper areas: weather, temperature, stock market item, traffic accidents. Their data must agree 100% with the teacher's tabulation of the same data.

Now imagine that five of the students in this class rarely use the library without being disruptive. Since they are usually asked to leave within five minutes after entering, the opportunity for collecting the newspaper data does not exist (assume the work is to be done in the library rather than at home). Obviously these five students are not showing the behaviors that contribute to the above performance objective. So, the teacher develops the following objective as a step toward achieving the first objective.

All students in my primary science course will spend sixty uninterrupted minutes in the library twice each week reading the newspaper. The behavior will be measured by using the "time-in" and "time-out" indicators on the library pass cards.

The needs assessment for this performance objective is not a test but rather a simple measure of the frequency and duration of visiting the library. A simple count or tabulation and perhaps a graph would be an appropriate "test instrument." in Chapter V where evaluation techniques are described, there is a detailed discussion of instruments that can be used for assessing needs as well as evaluation when simple frequency counts are appropriate.

Concluding Remarks

The third step in educational accountability is needs assessment to determine which performance objectives have been mastered. Instruction or delivery system analysis follows for those performance objectives not mastered. Classroom level needs assessment is often centered around basic skills and involves objective referenced testing. Objective referenced tests grow directly out of written performance objectives in that the performance objective either specified a commercial test or another method for measuring the behavior. Simple counting, tabulation and graphing are often used when assessing objectives, especially in areas other than basic skills and for objectives related to parent participation in educational development.

Needs assessment provides you with information necessary to plan your curriculum for groups or individuals. First, the nature of the curriculum is determined by the results of the needs assessment. In a sense those performance objectives not mastered become the course, class, semester outline, or the basis for individualized instruction. More

complex decisions can also be based on the results of needs assessment. Recommendation about the placement of individual students are made by comparing the results obtained from an individual student with the performance objectives. Questions about grouping students can be approached with precise information.

A needs assessment cannot be conducted unless performance objectives have been developed. There are two reasons. First, it would be unclear what type of needs assessment test should be developed or selected and what behavior should be assessed. Second, without the performance objective there is no criterion for judging the information from needs assessment. There is no need (or basis upon which!) to make educational decisions unless there are performance objectives.

CHAPTER IV

ANALYSIS OF DELIVERY SYSTEMS

I.	Identification of Goals
II.	Performance Objectives
III.	Assessment of Needs
→ IV.	Analysis of Delivery Systems
V.	Evaluation
VI.	Recommendations

Summary

This chapter is about the classroom as a learning environment and the teacher as the producer and manager of that environment. The following ingredients of the environment summarize the chapter:

a) a performance objective for the student is specified;

b) the student is made aware of small steps toward this objective;

c) information about his performance is immediate and continuing;

d) the environment is sensitive to the student, i.e., it responds differentially to degrees of good and poor performance;

e) information is provided to both student and teacher:

- the student learns not just whether he's right or wrong, but how far right or wrong he is;

- the teacher learns not just where a particular student is in his learning at any given point in time, but learns about the success and failure of a given instruc-

instructional sequence and receives data in sufficient detail to help in revision.

f) the teacher is primarily under the control of the student. That is, the teacher's behavior adjusts moment by moment as a function of his success or failure in producing the desired behavior in the student.

What is the function of a teacher in this scheme? One answer is that it is the teacher's job to help students reach specified performance standards by the end of the time available for instruction. The teacher performs other functions, but for the purposes of these materials we will focus on the teacher's responsibility to produce student performance.

Student performance is affected by many factors, such as previous training, interest in the subject, health, available alternatives, and peer group pressure. Teachers' influence on student performance can be exercised only in those areas over which they have some control. Four areas over which the teacher exercises control are the focus of this unit. They are: I. Instructional Sequencing (What is Taught When), II. Design of Classroom Activities (How to Use Class Time to Best Contribute to Student Performance), III. The D-sign of Feedback Systems to Improve and Maintain Classroom Performance (A Means of Communicating Objectives and Student Progress Toward Them), and IV. Accentuating the Positive.

These materials are designed to help you change the learning environment of your students to one which more closely approximates the one suggested above. This is the type of delivery system analysis usually done by teachers.

For purposes of this chapter a delivery system is whatever the teacher does to help the students reach the performance objectives and goals. Total delivery system analysis includes areas in addition to the

classroom and, therefore, out of the direct control of the classroom teacher. These include: student financial assistance, alternative occupational scheduling, development of neighborhood educational facilities, year round schooling, improvement of nutrition through school meals and many more.

I. Instructional Sequencing

Suppose a colleague brought you the following problem:

> "I can't understand what's wrong with my students. They forget so easily.
>
> My objective was for each student to correctly answer 4 out of 5 questions on each of 3 units on Africa by February.
>
> In the fall my class studied the climatic conditions of various parts of Africa. At the end of that Unit they all did very well on the Unit test.
>
> The class then studied Unit 2 on names of countries in Africa and their capitals, took the test on that and did well. Unit 3 covered the various governmental forms in Africa and everyone tested satisfactorily.
>
> However, on the final exam the class missed most of the items on climatic conditions in Africa and a few on the names of the countries and capitals. They did okay on the forms of government.
>
> These results are my needs assessment for the objective.
>
> How can I overcome this problem of 'instant forgetting' (improve my delivery system) for the next class?"

What could you suggest to her?

- Put climatic conditions last?
  You could, but probably whatever came first would be forgotten.

- Hand out booklets on Improving Your Memory?
  These would probably be used, but not to remember climatic conditions of Africa.

There are ways to attack the problem of "forgetting" and the one that you will learn here is: cumulative review and testing.

One solution to the problem of "forgetting" is to provide continuing opportunities for USING the material learned.

In the case of the African studies, the unit tests did provide a good opportunity for using the material learned, but only the material in the one unit.

Revising the course according to the "Cumulative Review and Testing" suggestions, it would be like this:

Teach	Test	Sample Items
Unit 1: Climatic Conditions	Unit 1	1. What is the climate like in this northernmost portion of Africa?
Unit 2; & 1 as it relates to 2: Names of Countries and Capitals	Unit 2 and 1 as it relates to 2	2. Suppose you wanted to move to a capital city which had a dry cool climate. Name a capital city that would be in a dry cool climatic area and name the country in which that city is located: capital city: _____ country: _____
Unit 3; & previous units as they relate to 3: Forms of Government	Unit 3, 2, and 1 as they relate to 3	3. Suppose you met an ambassador from Africa and learned that he represented a country run by a military dictatorship that was located in a hot humid area of Africa. Name such a country and the capital of that country. country: _____ capital: _____

Look at Sample Item 2 on this page. If the student studied only Unit 2: "Names of Countries and Capitals" could he successfully answer the item? Probably not, since the item requires knowledge of climatic conditions (taught in Unit 1) plus knowledge of countries and capitals. This revision provides continuing opportunity to use material learned at any point in the course. The rule used to make this revision is:

> Integrate and test previously covered material as you teach and test new units within a course.

Exercise

Using this rule, revise the sequence below to solve this problem: needs assessment shows students "forgetting" addition between Unit 1 and Unit 4.

Teach	Test	Sample Items	Results
Unit 1: Addition of 1 and 2 digits	Unit 1	1. Solve these problems: 6 4 72 13 +3 +11 +48 +88	OK
Unit 2: Subtraction of 1 & 2 digits	Unit 2	2. Solve these problems: 7 17 16 97 -2 - 8 -12 -49	OK
Unit 3: Multiplication, 1 digit	Unit 3	3. Solve these problems: 9 5 2 9 x3 x4 x7 x8	OK
Unit 4: Multiplication, 2 digits	Unit 4	4. Solve these problems: 11 14 45 84 X3 x12 x72 x39	OK

Describe your revised sequence on a sheet of paper. Use the headings:

Teach	Test	Sample Items

Answer: A Sample Revised Sequence

Teach	Test	Sample Items			
Unit 1	Unit 1	6 +3	4 +11		
Unit 2 & Unit 1 as it relates to 2	Unit 1 & Unit 2	7 -2	5 +8	14 -8	16 +2
Unit 3 & 1 & 2 as they relate to 3	Unit 1 Unit 2 Unit 3	9 x3	12 +7	5 x4	11 -8
Unit 4 & 1, 2 & 3 as they relate to 4	Unit 1 Unit 2 Unit 3 Unit 4	11 -3	14 x12	18 -9	24 x36

So far we have seen that one method of improving overall student performance through sequencing involves relating previously learned material to that which is presently being taught. This means:

1) As we teach a new unit, we must also teach how previously learned material relates to this new unit; and
2) As we test for student mastery over the currently taught unit, we should also test for mastery of how previously learned material relates to the current unit.

By teaching and testing each unit as an isolated segment, the student has only a collection of bits of information which he must try to structure on his own or which never does become a structured whole. By designing a course using this concept of cumulative review, the student is likely to learn the concepts, interrelationships, and functions of various parts of the subject matter.

II. Design of Classroom Activities

On a day-to-day basis there are many things that can be done to improve the likelihood of student success.

Since there are many students of varying performance levels in a classroom and since there are limited time and resources, the challenge of best use of classroom time is a continuing one. This section suggests ways in which better use can be made of effective teaching practices already in use.

You, as a teacher, are already doing many useful, productive and creative things in the classroom. Unfortunately, it's very often difficult to tell which actions are helping, which are hindering, and which are simply having no effect.

Here are two ways to make past and future teaching experiences more useful. The first is to critically evaluate how directly actions relate to the objective, and the second is to adapt past solutions to present circumstances.

The following exercises show how to:

1) evaluate suggested actions as to how directly they contribute to reaching an objective; and

2) adapt past solutions to situations with new constraints.

Relating Actions to Objectives

Exercise

Performance Objective:

All students in a second year foreign language class will speak in animated and natural ways by the end of the year. The teacher will observe during class conversation periods. Student response to questions will be as rapid as in English. Statements will be about topics usually heard in student conversation in range of teacher hearing out of class. The conversations will resemble student conversations out of class by teacher criteria.

Needs Assessment:

When students talk they hesitate frequently and for 5 to 10 seconds. Usually they ask the teacher for a word. No more than 5 of the 20 students even talk during class conversation periods.

Given the objective and needs assessment above, check (✓) the suggestion below which leads more directly to the objective.

A ( )

Get students to use puppets or characters on a flannel board during their presentations of pre-rehearsed dialogues. Maybe using visual aids would provide incentive for them to practice more. They would then present their pre-rehearsed dialogues during class period and because they had practiced more and had the added stimuli of visual aids their presentations should be lively, animated and natural.

B ( )

The students would make a short list of questions about day to day things, such as school events, clothes, etc. Each group of 3 or 4 should carry on a conversation about one or more of these topics during the next class. Since the teacher would specify the topics only at classtime, students would be more likely to use natural conversation as opposed to memorized dialogues.

Answer

Because the dialogues in A would be pre-rehearsed, they would probably be less natural than free-form conversations on familiar but less rehearsed topics, B.

Adapting Past Solutions to New Constraints

Some general ways to meet common classroom constraints would be:

1) Using students to do things that teachers could not do by themselves.
2) Allowing students to be doing different things from each other at any one time.
3) Providing for some means of monitoring quantity or quality so progress is visible.

Most teachers would agree with these as useful ideas; the problem comes in seeing how the general idea applies to their specific circumstances and problems.

Since teachers have solved similar problems in the past, you may find yourself in the position of adapting old solutions to new constraints. The following exercises will give you some practice in that skill. There are no absolute correct answers. Any delivery system (solution) that is likely to work is good. You are probably on the right track if one other teacher looking at the exercise agrees that your suggestion is likely to help reach the objective.

Exercise I

OBJECTIVE	CONSTRAINT	ACTION
Fifth grade teacher wanted members of the class to participate in each discussion.		Appoint one of the fifth graders as discussion leader. He can call on each person only once. When a person has contributed to the discussion his row is credited with a point. The row to accumulate the most points is allowed to go out to recess early.

(Now, suppose you have the same objective but constraints won't allow the use of the above solution. Adapt the solution to each constraint below. The first one is done for you.)

1. Can't let students out to recess early.	Same solution, but different payoff for the row which earns the most points. Possible alternatives: they get to choose the topic for the next discussion; they get 5 extra minutes of library time; they get to choose the next activity; they get to use some special materials during arts and crafts time.
2. No natural groupings such as rows or tables exist.	Your answer:
3. Children too shy to get up in front of whole class	Your answer:

38

Exercise II

OBJECTIVE	CONSTRAINT	ACTION
Sixth grade current events students who are ahead of the rest of the class will engage in useful academic tasks during group paced activities.		Let them choose research projects to work on in the library and report the findings to the class intermittently.

(Suppose this teacher can't use the same solution because of the constraints below. What would you suggest?)

1. Administration doesn't allow them to go to library during a scheduled class hour.	Your answer:
2. The group that is way ahead is too numerous to allow them each to report on projects during class time.	Your answer:
3. The group that's bored is a "slow" group and they just seem to flounder when sent to the library to choose a subject and research on it.	Your answer:

Exercise III

Now that you have learned about relating actions to objectives and adapting past solutions to new constraints, you will have the opportunity to try your hand at developing entirely new activities leading to objectives. To help you do this, we have included two items:

1) an Activity Design Suggestion List
2) an Evaluation Checklist for assessing your suggestions.

The Activity Design Suggestion List starts on the following page. Use it as you go through the "Simulated Problems" on pages 43 and 44. You may refer to the list any time you're trying to come up with a suggested action - in these materials, or in your own teaching situations.

Here are the ways you might use the suggestion list:

a) use an item exactly as it appears on the Suggestion List;
b) modify a suggestion from the Suggestion List to fit the constraints of a situation;
c) use the Suggestion List as a springboard for generating new suggestions of your own.

The Evaluation Checklist is printed on page 44. Use it to evaluate and improve your suggested actions - in these materials, in talks with colleagues, and in your own teaching situation.

ACTIVITY DESIGN SUGGESTION LIST

Below are some specific suggestions for what to do when you want certain kinds of behavior. This list is a beginning; you will undoubtedly want to ADD YOUR OWN IDEAS TO IT.

DESIRED BEHAVIOR	SUGGESTION
A. Students go beyond exercises in the textbook	1. Adapt present materials by: a) writing questions, b) adding examples, c) deleting material d) selecting or resequencing material, or e) providing a model or guide for students to do a) or b) 2. Obtain supplementary materials
B. More class participation	1. Hand out cards to students. They turn in one card each time they participate. Each student must have turned in all his cards before class ends. 2. Lower your standards for quality of participation until you get the QUANTITY of participation up. Then you can work on quality. 3. Have student graph the number of times he participates in class. Reinforce improvement. 4. Design (and use) materials which require student participation, such as: a) small group activities & reports, b) student-to-student tutoring or monitoring, c) documents for next class, new students, or younger students (such as an introduction to the school), d) documents for class use such as questionnaires for field trip or a list of outside readings on some topic of interest, e) use role plays, or f) have students write (ask) questions, problems, or examples for class use.
C. Students (fast/slow) keep occupied while majority of class is in group paced activity.	1. Continue the group activity, but individualize the standards. 2. Use individualized instruction prior to classtime to bring everyone to same level for group activity.

ACTIVITY DESIGN SUGGESTION LIST (Cont.)

DESIRED BEHAVIOR	SUGGESTION
	3. Use individualized instruction concurrently with the group activity.
	4. Use individuals to teach others.
	5. Pair individuals.
	6. Assign atypical students to projects which could be carried on outside the classroom.
D. Students express themselves more freely in a foreign language or creative writing	1. Teachers speak in foreign language less formally (e.g., tell an anecdote) and display informal writing of their own.
	2. Ask questions about daily life rather than only textbook questions.
	3. Teach early and treat as acceptable the use of the phrase in the foreign language which means: "How does one say '_____' in _____ (foreign language)?"
	4. For a foreign language, make one type test item on quizzes be one of a universe of spoken questions (requiring spoken answers) such as "Tell me about your new dress/shirt." "Tell me about your haircut/hairdo." "Are you going to the _____ (school event)?" "Tell me about it."
	5. Teachers participate in role plays and dialogues, so they can serve as both model and source of encouragement when students use the language expressively.
E. Students are active during drills and say they are interesting (How to make drills more motivating)	1. Switch from one drill to another frequently.
	2. Have students lead the drill.
	3. Provide record of progress in skills mastered through drills.

Simulated Problems: For the problems below make at least 2 (TWO) suggestions. You may use the "Activity Design Suggestion List" whenever you wish. Be as specific as possible and use examples to illustrate what you mean.

In using the Suggestion List first decide what kind of behavior is relevant. #1 below, Current Events, seems to fit best under B, "More class participation."

Secondly - look at the suggestions and choose one that you think appropriate, modify a suggestion so it is appropriate or write a suggestion not on the list.

In the case of Problem #1, all of the suggestions under B on the Suggestion List could be used.

1. Current events. The current events class consists of 32 junior high students. There are 20 minutes allowed for discussion of some new event.

   Objective: Each student will participate once every other 20 minute discussion period.

   Needs Assessment: Three students seem to dominate and monopolize each 20 minute period. The others never volunteer comments.

Suggestion 1:

B1. Handout cards. Each student turns in a card as he participates; each student must have all cards turned in before class ends. (Modification: put some time limit, such as 3 minutes, on any student's comments to be sure there's time for everyone to participate.)

Example of use:

Make out cards for 6 (six) 3 minute time periods. Distribute them, making certain that the students who rarely volunteer receive a card. Allow only students with cards to comment and require students with cards to comment. They would not be required to use the full 3 minutes.

Now you make the second suggestion. Give an example of how it would be used. Then evaluate your suggested action using the Evaluation Checklist on p. 44. Another way to evaluate your suggested actions is to have another teacher rate them using the Evaluation Checklist.

2. Woodworking. A woodworking class of 24 students, has only eight work positions. Eight students work with materials each day, while the other 16 wander around. The teacher rotates the class so that each student gets to work once every four days. He wants their in-class time to contribute to learning about woodworking more often than one out of four days.

   List 2 (two) suggestions you would make, give examples of use and evaluate your suggestions.

3. Mathematics. A 40 minute math class consists of 30 students. At present, the teacher calls on a student to put one of the homework problems on the board. It is discussed. She calls on another student to put another problem up. About 3 or 4 students participate each day. She wants more students participating daily in order to get more practice relevant to the homework objectives.

   Write 2 (two) suggestions. Give examples of use. Use the Evaluation Checklist to judge your suggestions or discuss them with another teacher.

EVALUATION CHECKLIST

Ask yourself these questions:

1. Does it contribute to reaching the objective?
2. Can I change it so it would contribute more directly? (If so, change it!)
3. Can it be used, given the known constraints on the teacher?
4. How much time does it require of the teacher in class? Outside of class?
5. Can any of the teacher's actions be taken over by another person, such as a student or assistant teacher? (If so, specify how.)

III. The Design of Feedback Systems

What is Feedback?

Feedback to students is the information each one has on how well he is doing. Feedback can be used to reduce the teacher's workload and increase both a student's interest in his work and the quality and quantity of his work.

The specific feedback system we will be using has these parts:

1. A task for a student to do related to a performance objective;
2. Quantification of this task;
3. A graph showing past and present performance on the task;
4. A procedure for using the graph to guide performance improvement or maintenance.

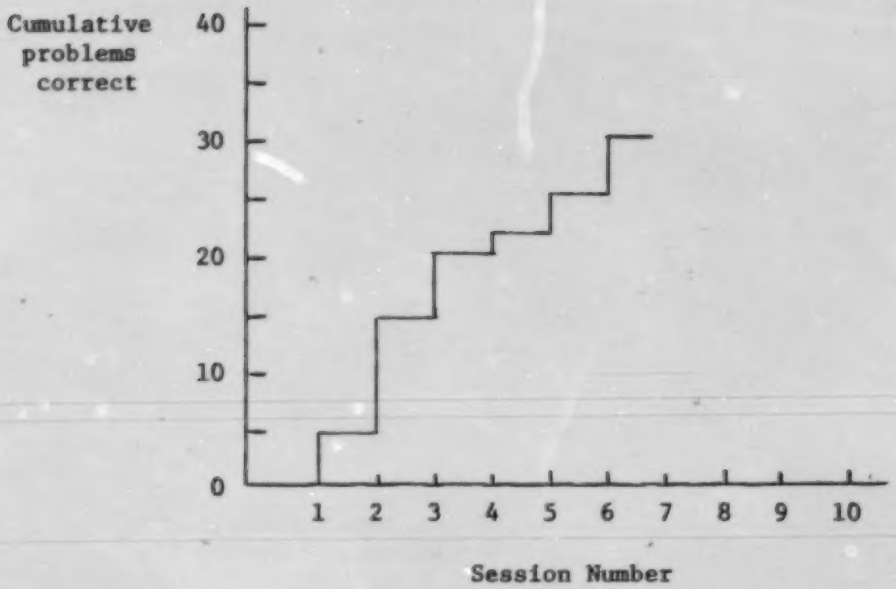
Procedures for Using the Graph

We will first examine part 4, procedures for using the graph, and later deal with parts 2, and 3. Part 1 has already been treated under Goals and Performance Objectives.

The procedure for using the graph can make the difference between success and failure. One procedure, namely commenting only on a deterioration in performance or only on how far below standard the student is, converts the originally neutral feedback into a very negative event. On the other hand, an alternative procedure, commenting on improvements in performance, can convert that originally neutral feedback into a very positive and rewarding event.

The differences in the procedures are: when the teacher chooses to comment and what the teacher chooses to say. Here is an example.

Cumulative number of algebra problems completed correctly by John Doe



Using the positive strategy a teacher would comment on John's work on Day 2 and Day 6, because the performance on each of those days shows an increase in the number of problems completed correctly in a day. He might say:

- "Good work"
- "You did very well today, John"
- "You're really catching on"
- "Great - you did 10 problems today" (Day 2)

Do you think John would look forward to comments from his teacher? Probably, since the comments are recognition that his most recent work stands out as being good.

He is provided with a model of what to do rather than what not to do. Since the model is his own work, he is assured that it is an attainable model rather than an unrealistic ideal.

One goal of a feedback system in the classroom is to get the student to seek out feedback and use it to analyze and improve his own performance. He's more likely to do this when he can examine what he's done right and try to do more of it, rather than trying to avoid what he's done wrong.

SUMMARY OF EFFECTS OF COMMENTING ON IMPROVEMENT VS. COMMENTING ON DETERIORATION

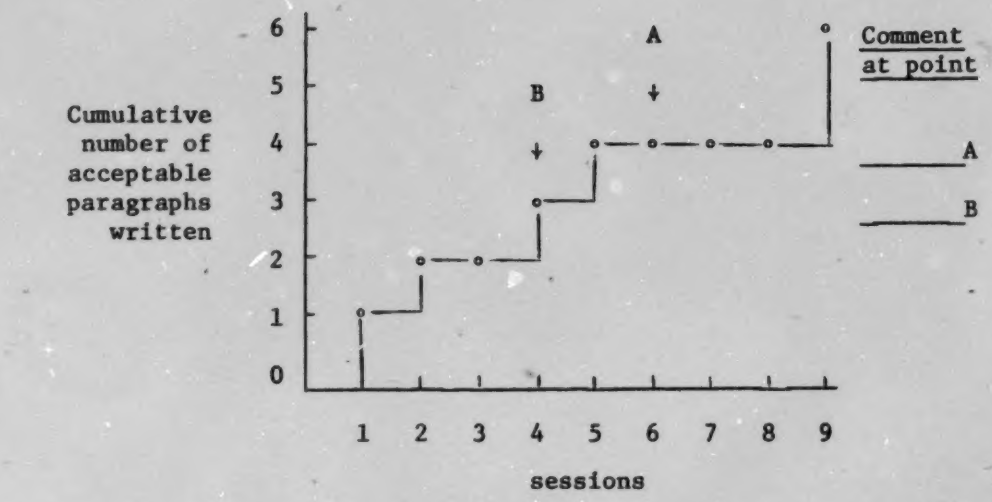
If one comments on performance when it is:

Improving	Deteriorating
1. The student can be proud of the comments.	1. The student can be embarrassed or angry about the comments.
2. It tells him what to do more of - provides a model.	2. It tells him one thing not to do, doesn't tell him what to do.
3. He'll seek out feedback as often as possible.	3. He'll avoid feedback as often as possible.
4. If he wants attention he can get it by improving.	4. If he wants attention he can get it by becoming poorer.

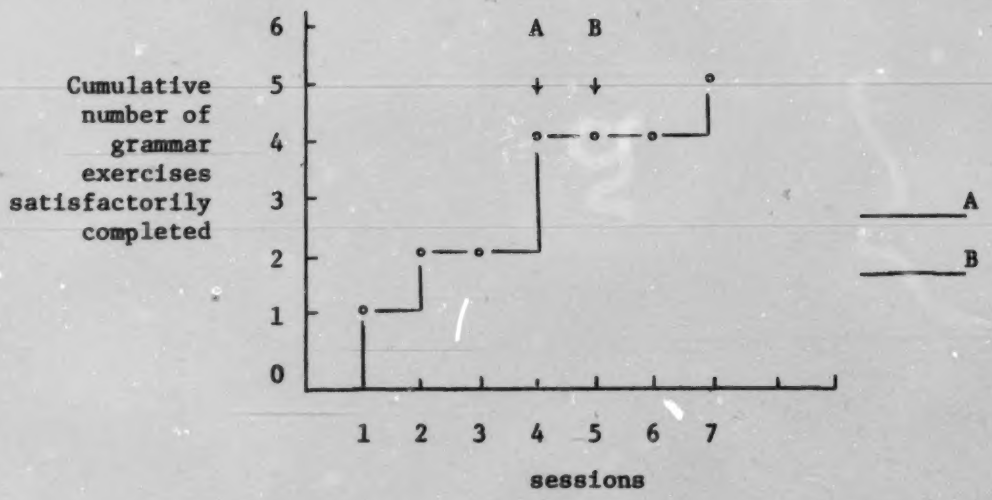
Exercise

A teacher wishes to comment on improvement. Check the points on the following graphs at which comments should be made.

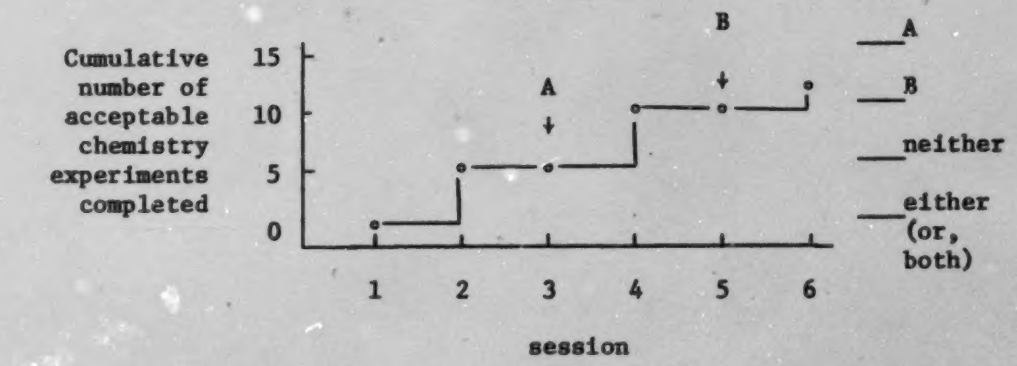
1.


Cumulative number of acceptable paragraphs written
6
5
4
3
2
1
0
A
B
1 2 3 4 5 6 7 8 9
sessions
Comment at point
A
B

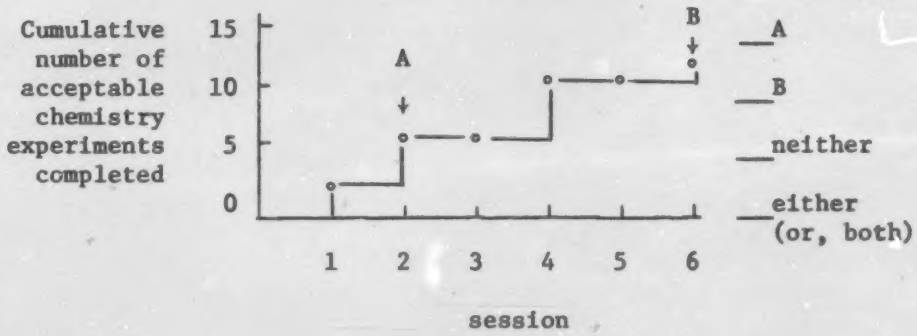
2.


Cumulative number of grammar exercises satisfactorily completed
6
5
4
3
2
1
0
A B
1 2 3 4 5 6 7
sessions
A
B

3.


Cumulative number of acceptable chemistry experiments completed
15
10
5
0
A
B
1 2 3 4 5 6
session
A
B
neither
either (or, both)

4.



Answers

1. B
2. A
3. neither
4. either (or both)

By commenting on improvement a teacher can get students to seek information on how well they are doing. Once students actively seek this feedback there are many ways that the feedback can be plotted and used.

Quantifying the Task and Reaching Objectives

Whenever you decide to keep track of something you have to decide how you will measure it. In the case of feedback on student performance, you have to decide what size tasks to count.) you count books read, or chapters read, or paragraphs read or words read?

The answer is, "It depends". There are times when you would count books read and times when it would be more useful to count words read. This section shows you some examples and provides some practice in specifying what size units to measure.

Students in foreign languages often expect overnight results and rightfully so. If a student spends 2 or 3 hours working, he should be able to see a change in his skills. The problem is that students and sometimes even teachers keep track of only macro-progress - (the kind that takes a year or more) - not micro-progress - (the kind that can be seen in 2 or 3 hours).

For instance, a student has studied French 3 hours tonight. Did he get results?

Let's look at it 2 ways:

1. MACRO-PROGRESS way -
   Does he know French? Absolutely not.
   Does he know more French than yesterday? Not much.

2. MICRO-PROGRESS way -
   What was he trying to master in those 3 hours?
   a. 20 vocabulary words
   b. A new verb form
   c. Comprehension of a 3 page essay

   Did he succeed?
   a. He can translate 16 of the 20 words. (80%)
   b. He can correctly use the new form in the exercises at the end of the lesson. (100%)
   c. He can correctly answer questions on the 3 page essay. (100%)

   Does he know any more than yesterday?
   He sure does!
   16 new vocabulary words
   1 new verb form
   3 pages of a French essay

The point is that all too often we only identify the end-target performance of a course, but don't bother to break it down into intermediate points of progress.

This is like saying to someone in Minneapolis, "Drive to Mexico City; it doesn't really take very long, and it's so nice to have a car after you get there". If the driver doesn't know any of the points

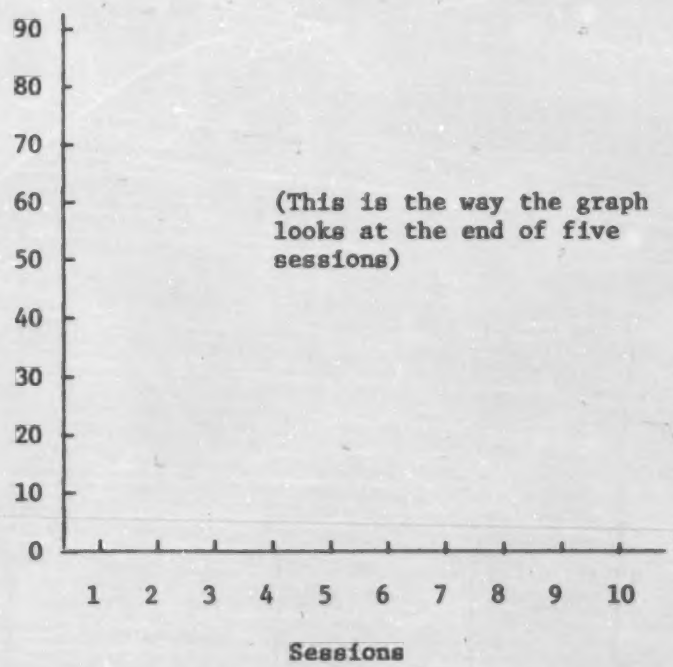
along the way, he may get discouraged after a while and say, "I'm still not there! You may not think it takes very long, but I'm tired and don't know how much longer this will go on. I quit!" The driver might say this to himself 100 miles north of Mexico City, in Texas, or in southern Minnesota, depending on his expectations.

Exercise

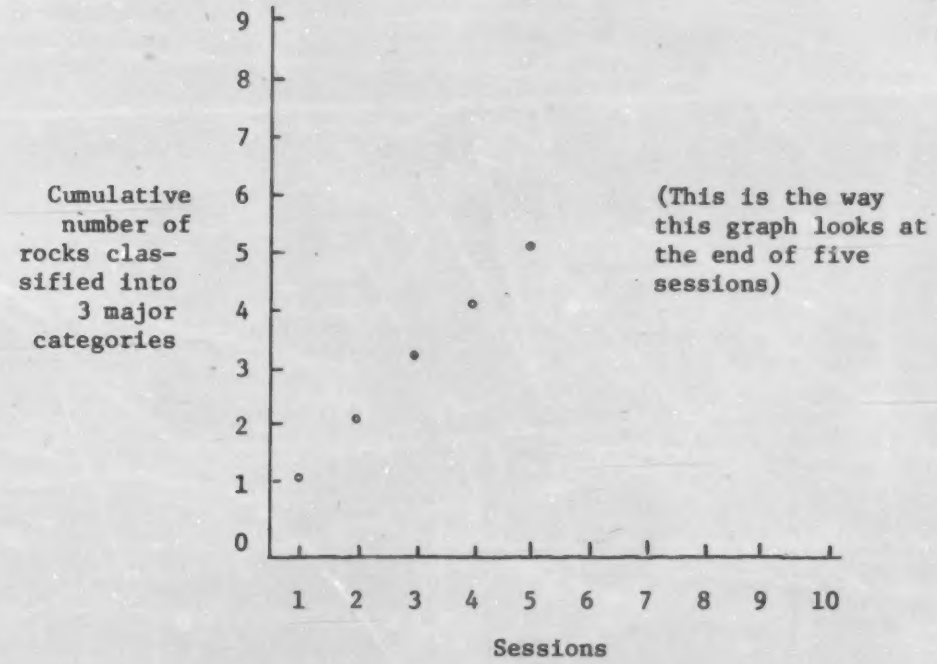
Assume that you are talking with a geology teacher who brings in the two performance feedback charts below and says,

> "I plan to give the students a performance feedback chart the first day of class, so that they can see some change in their achievement. That way they can keep track of their progress. An objective for the course is to be able to identify 120 rocks to my satisfaction. An objective for the first 10 sessions is to be able to sort rocks into 3 major types without naming specific rocks. Which of these graphs is better, A or B?"

A.



B.

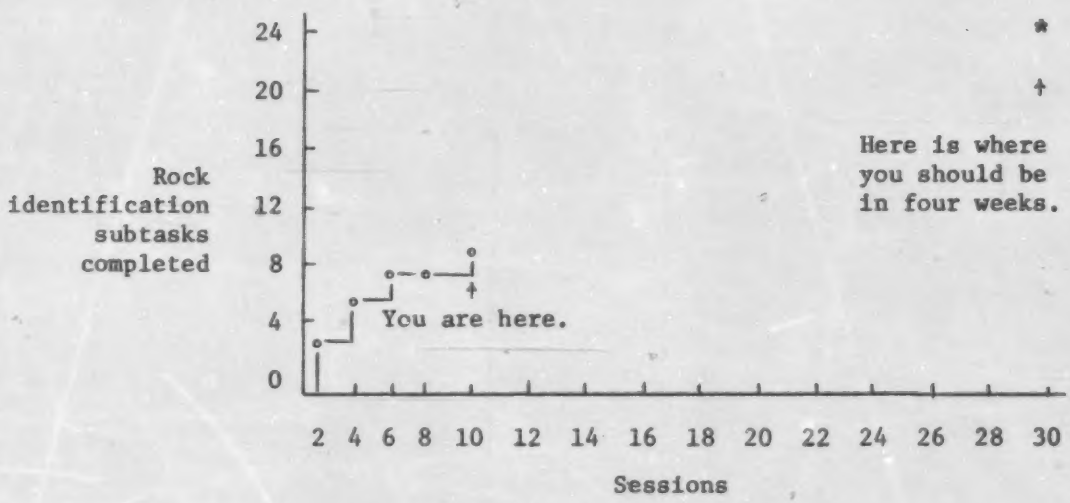


Answer

B.
In graph A, nothing is entered by the end of Session 5.
In graph B, 5 rocks are entered by the end of Session 5. These are rocks which the student can classify as to type.

Once the students have experienced success in a segment of the course, it is a good idea to relate that successful performance to larger units in the course.

During the next 20 sessions, the geology students will have to learn specific names of igneous rocks. So at the beginning of Session 11 the teacher might hand out a graph covering the first six weeks or 30 sessions that looked like this:



Geology: 1st six weeks

This would indicate:

1) How much the student had already accomplished.
2) Objectives for the next units.

Through feedback charts which allow the student to map his progress, interest can be maintained over long periods of time.

To students who may not be specialists in <u>any</u> field at the time they first encounter <u>our</u> specialty we have a selling job to do to convince them that:

1) If they study this field there will be an opportunity for enjoyable experiences not otherwise available to them; and

2) They are capable of learning the subject matter in this field.

The first function can be fulfilled by showing students some of the things they'll be able to do after the course that they can't do now.

Often it is possible to convince a student of the value of learning a subject matter and still not be able to convince him that he could master a meaningful part of it. He knows where he is now in terms of skill in using the subject matter and can see no way of getting from where he is to where you're telling him he can be by the end of the year.

One way of convincing students of the feasibility of their achieving what you say they can achieve is to give them short-term goals and have them quickly experience success in meeting these goals.

IV. Accentuate the Positive

An important point in the design of feedback systems is that a little bit of attention to the progress a student is making will produce even more success.

Our emphasis throughout this course has been positive. In determining goals and performance objectives we encouraged you through our examples to state things in a positive way. Our needs assessment and evaluation strategies also emphasized the measurement of success rather than dwelling on failure. Here in the examination of a few delivery system techniques, we have also emphasized the success rather than the failure of students. In fact some things and events not only provide the student with information about his success but cause him to do more of the same.

We are encouraging you to direct your attention to positive behaviors and reduce your attention to negative behavior.

As with any of the delivery system techniques you need some measure of the "state of affairs" before they are tried so you (1) can tell if it's actually needed and (2) have something to measure its effectiveness against. If you wish to try ignoring negative behavior and responding to positive behavior as a delivery system to change undesired behavior, a needs assessment measure is an appropriate early step. Here's an example:

Objective:	Each student in the 7th grade shall talk during recitation by first raising his hand and being recognized by the teacher. Teacher will record frequency of desired response.
Needs Assessment:	Five of the 23 students talked a total of 49 times during the last three days without raising their hand. Eighteen students already meet the objective.
Delivery System Analysis:	For the five students not achieving the performance objective the teacher stops whatever she is doing and "corrects" the undesired behavior. The new method will be to ignore talking out of turn and respond to each student raising a hand. One student will help by tallying persons who raised their hands. Five minutes at the end of recitation will be reserved for those who raised their hands to talk if they did not get a chance earlier.
Evaluation:	Record proper and improper talking on a daily basis to note effect of new delivery system.
Recommendation:	Write up success describing the procedure for other teachers in your building.

Concluding Remarks

The Michigan Department of Education's position statement on educational accountability describes the delivery system as that part of the educational system that produces what assessment indicates is

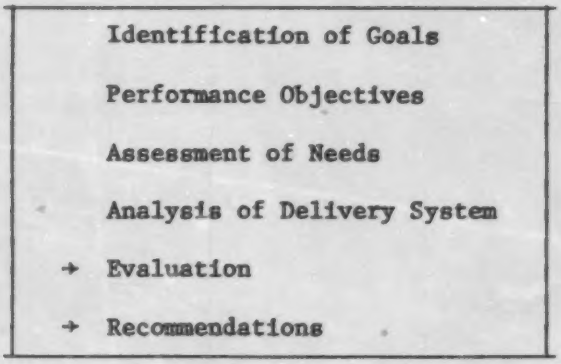
needed. The classroom application is in areas where the teacher has direct control and responsibility for producing and managing the learning environment. Complete delivery system analysis and management includes several additional areas not directly controlled by the teacher such as the home environment.

Needs assessment specifies which performance objectives have to be mastered and the performance objectives specify what the delivery system must produce. Further, they indicate the kind of delivery system needed. If the behavior element of the performance objective specifies "writing," then delivery systems or instruction consisting mainly of reading and reciting must be ruled out.

Now it is time to move on to the remaining steps in the accountability process and ask if the delivery system is working. The next chapter describes a variety of ways to ask this question, gather data for the answer, and make recommendations for improvement.

CHAPTER V

EVALUATION AND RECOMMENDATIONS



Summary

Evaluation is testing whether a new or existing delivery system serves the assessed needs and is done both during and at the end of instruction. It will become clear in this chapter that performance objectives often break down into smaller objectives or intermediate points of progress. Evaluation during instruction is aimed at these smaller objectives while at the end of instruction evaluation is aimed at the main performance objectives. They are related and equally important. The availability of performance objectives allows teachers to fairly test what they taught, to analyze complex behavior into its parts to develop valid measures and test items and to build effective feedback into instruction.

Recommendations for improvement constitute the critical step in using accountability to improve classroom learning. In this book we have focused on recommendations for improving delivery systems directly influenced by the teacher in classroom instruction. Within that focus, we are concerned with recommendations resulting from evaluation of smaller objectives and main objectives in the following ways:

> Evaluation of smaller objectives is concerned with the process of instruction and recommendations in answer to questions asked by the persons most closely concerned with that process. Students ask, "Have I finished this assignment well enough to go on?" Teachers ask, "Should I revise the instruction for this objective?"
>
> Evaluation of main performance objectives is concerned with outcomes of instruction and recommendations in answer to the following questions:
>
> (1) How do the results compare with the performance objective?
>
> (2) If part or all of the performance objective was attained:
>
> Was the strategy worth the cost and effort?
>
> Should it be used again?
>
> Should part(s) be used again?
>
> Should the strategy be recommended to more teachers (principals, students, etc.)?
>
> (3) If the performance objective was not attained satisfactorily, are there feasible revisions that should be made and which justify another trial of the strategy?

Evaluation During Instruction

Periodic measurement allows the teacher to intervene long before the final (and often incorrect) student performance. We can usually be more effective in remediating if the student's error is discovered as he is committing it rather than after he has compiled several different errors. Periodic data gathering allows us to see our effect on the

student and we can adjust what we are doing on the basis of the feedback we get. Periodically measuring the behavior we are trying to change is the best check that we are going in the desired direction.

Here is a situation where periodic measurement produces information that allows a teacher to continually adjust the "delivery system" so that the students master the performance objective below. This is especially important when sustained work is required over relatively long periods of time as in the term paper writing referred to below. Many bad papers are written because periodic measurement was not used to determine if students were on the right track.

Example

Performance objective:

Who:	All students in a freshman English course.
How:	Synthesize reference skills, expository writing skills and choosing a research topic of personal interest by writing a term paper.
What:	Reference skills, expository paper format and choosing a topic of personal interest to communicate.
When:	By the end of the semester.
How Measured:	The teacher will judge papers using checklists of criteria for resource citation, paper format and author presentation of reasons for selecting topic.
How Well:	All items on resource citation and paper format present. At least two of the major reasons for selection of topic present.

One teacher has her students submit as many drafts or partial drafts as they like during the writing process. She evaluates by indicating "O.K." or suggesting some change. When the work load becomes too great she finds the 3 or 4 acceptable papers and suggests students do their own short-term evaluation by imitating another student. In this way only students having unusual difficulty require her attention.

Another example shows the importance of continually gathering information.

Example

Seven children in a fifth grade class are frequently not completing required work in class or out-of-class. The teacher wants to achieve this objective of work out-put. She does a needs assessment gathering the following baseline information. (Data was tabulated for all students; that from one is reproduced below.)

Date	Math	Reading	Science	Art	Music	Total
11/2	✓		✓			2
11/3					✓	1
11/4		✓		✓		2
11/5						0
11/6	✓				✓	2
11/9						0

(✓) indicates assignment complete. There is one assignment per day per subject.

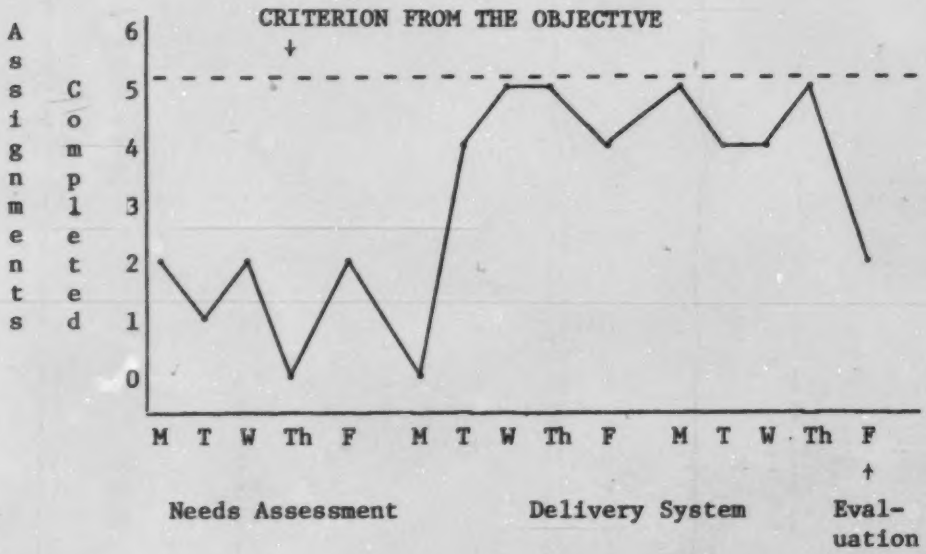
More work needs to be produced in all subject areas because the objective requires all assignments be completed. Imagine for a moment that the teacher modifies her delivery system in an effort to get more work out of these students and after 2 weeks decides to evaluate. The following is the evaluation data for the entire group on Friday of the second week.

Student	Math	Reading	Science	Art	Music	Total
1	✓		✓		✓	3
2		✓				1
3		✓	✓	✓		3
4		✓		✓		2
5						0
6			✓			1
7	✓	✓			✓	3

← Student used in this example

Assignments completed Friday

Evaluation looks bad. In fact, on the basis of these data one might conclude that the adjustment in the delivery system did not produce the behavior desired. Suppose, that instead of the evaluation indicated above this teacher had continually kept a record of performance starting at the end of needs assessment and continuing through the two-week try-out period. She would have collected the information on the following graph. (Only data for one student is reproduced here for clarity. The remaining six were about the same.) Apparently the strategy was working until the day of evaluation.



Based on this additional information one would not conclude that the delivery system was failing - in fact it looks very successful. There are a variety of reasons why performance was so low on

evaluation day. Imagine now the reverse situation, a situation where the students did exceptionally well for the evaluation but other times did very poorly!

There are a variety of instances in which daily attention to performance provides helpful information to the teacher. The two most important are that (1) trends and slow changes can be detected; and (2) adjustments in the delivery system can be made before a student leaves the classroom if things are not going well! Evaluation only at the end of the school year does not give the teacher a chance to alter the delivery system for the unsuccessful students.

Evaluation at the End of Instruction

The time to check the effectiveness of tentative delivery systems in relation to terminal performance objectives is after an appropriate amount of instruction has occurred.

Example

Miss Barnhigh wanted her fifth grade students to solve division problems with two-digit divisors before attempting the next skill in a sequence of math skills. Her performance objective was the following.

Who:	Fifth grade students in Miss Barnhigh's class.
How:	solve problems.
What:	division problems with two-digit divisors.
When:	before attempting the next skill in the math sequence, but at most, two months.
How Measured:	5 item test below.

1. $77\overline{)3254}$
2. $83\overline{)265}$
3. $61\overline{)3457}$
4. $42\overline{)8736}$
5. $59\overline{)38,562}$

How Well: 4 of 5 correct on the test.

The pre-test was given on October 20. Only two students solved any problems. None of the students met Miss Barnhigh's standard of 4 out of 5. The post-test (evaluation) was given one week before Christmas vacation. It was the same as the pre-test, with changed values for divisors and dividends. The results were:

		Miss Barnhigh's standard +					
Number correct:	5	4	3	2	1	0	
Students:	15	4	4	2	0	0	Total: 25

Nineteen of the 25 students showed mastery of this skill. The improvement was clear: from zero in October, to 76% of the class showing mastery. The instruction (delivery system) was successful for 19 students.

This teacher could now make two kinds of useful decisions. First, there are decisions about the students: nineteen have mastered the performance objective and can move on to another instructional unit; six will require some other action. Also, the skills these students have mastered and have failed to master can be clearly specified to others because they are linked with performance objectives through the evaluation test items. This is particularly important if the six have to receive help from another teacher. Second, since the delivery system worked for 76% of the class it should probably be considered successful. The six students who did not achieve mastery may require a different delivery system approach. Because this delivery system is now linked to needs assessment and evaluation instruments and consequently to performance objectives, it is a "package" that can be used again when another needs assessment indicates specific performers are not achieving the same behaviors.

Testing What You Taught

Evaluation of all objectives requires that students be taught the same things on which they are tested. Otherwise the following is likely:

A foreign language student whose teacher emphasizes conversation may do very well at conversing in the foreign language, but very poorly when his next teacher gives him a written test requiring that he write formal rules of grammar for the foreign language. Likewise, the student whose teacher emphasizes written and formal grammar would do poorly when tested or evaluated on the basis of

how well he could converse in the foreign language (as any traveler in Paris who has tried to rely on his college-taught French will tell you!)

There are situations where the student is frequently not being tested on what was actually taught:

(1) taking standardized tests;

(2) switching to a different school;

(3) changing to a different teacher; and

(4) changing to a different text.

Since students in any one class may be transferring to a number of locations or taking any of many different qualifying exams, it is impossible to completely eradicate the problem of being tested on different material than the student was taught.

However, this problem can and should be overcome <u>within</u> the confines of one teacher's class in one school. The next exercises provide examples of how this problem can arise, and what can be done to overcome it.

<u>Exercise</u>

Use the rule:

> If the final exam includes when to use or how to combine items, procedures, rules, etc., then the course content must specifically teach when to use or how to combine them.

Check (✓) the teaching sequence below which would be most likely to yield good scores on a final exam question like the one shown. That is: would a student who had gone through Sequence 1 in the course do better than a student who had gone through Sequence 2?

Typical Final Exam Question

Here is a situation:

> "Two plots are planted with different hybrid corns. Compare the yields and the confidence limits for the difference. The amounts were...," etc.

Choose the appropriate statistical procedure and carry it out.

Statistics Sequence 1 ( )

A. Method of calculating and checking procedure A

B. Method of calculating and checking procedure B

C. Method of calculating and checking procedure C

Statistics Sequence 2 ( )

A. When and how to use procedure A

B. When and how to use procedure B

C. When and how to use procedure C

Answer

Statistic sequence 2.

Because it explicitly teaches when to use the various statistical procedures and the test requires the student to decide when to use a procedure as well as how to use it.

Exercise

The following performance objective lacks a description of the measure. Read the objective and the sample test items and choose the item which more fairly tests what is taught.

Performance objective:

Who:	11th grade students in Consumer Economics.
How:	specify the appropriate insurance for people in varying circumstances.
What:	The 4 major types of insurance.
When:	Before making a complete year-long budget for a family.
How Measured:	(This is the question to be answered in this exercise.)

How Well: Depends on How Measured, but probably 100% accuracy is reasonable.

Item A ( )

Define term insurance in your own words. Use an example to illustrate what you mean and show how it differs from other kinds of insurance.

Item B ( )

What is usually the best type of insurance when a large amount of protection is needed for a temporary period.

1) Straight Life
2) Limited Payment
3) Endowment
4) Term

Answer

How the student is to behave is stated as using information to solve a specific kind of problem. Item A asks for description; Item B asks for problem-solving. The measure should have at least four descriptions of insurance need in the format of Item B.

Writing Test Items

Analyzing a Task

Analyzing a task means determining the skills needed to achieve a performance objective. If you can analyze the parts of a task or problem, you will be well prepared to write valid test items. Knowing what the test items will be, you will be able to prepare useful and economical instructional materials.

Exercise

Work this problem in long division; carry the work to 3 places and round to two places:

$297\overline{)465}$

Now, make a list of each skill a student needs to work such a problem and the order in which he needs it. The list begins like this:

Must be able to:

1. See.
2. Read and write numbers
3. Know what $)\overline{\quad}$ means.
4. Approximate multiplication and/or addition to find the first figure for quotient.

5.
6.
7.
etc.

Answers

$$297/\overline{465.00} = 1.565 = 1.56$$

297
1680
1485
1950
1782
1680

5. Know where to put answer.

6. Multiply.

7. Subtract with borrowing.

8. Place decimal.

9. Add zero.

10. Bring down zero.

11. Place decimal in answer.

12. Make approximation as in (4.).

13. etc.

14. Must know the rule for rounding if last number is 5 and be able to apply.

Exercise

See if you can write one or two test items which measure only the component behavior for the task parts 5 "Know where to put answer" and 10 "Bring down a zero" given above. First, look at an example, for part 9 "Add zero."

Example. Q.: You have gone this far in a division problem. What is the very next thing you must do?

$$4/\overline{17.}$$
4.
16
1

A.:

(a) Multiply 4 x 4.
(b) Subtract 16 from 17.
(c) Add zero to 17.
(d) Place a decimal in the answer.

Now you make items for 5 and 10, "Know where to put answer" and "Bring down zero."

Answers

5. Here are some division problems. Put an X on each problem where the first number in the answer should go:

(a) $2\overline{)16}$ (d) $9\overline{)9750}$

(b) $13\overline{)27}$ (e) $9\overline{)8750}$

(c) $27\overline{)2065}$ (f) $27\overline{)3254}$

10. Here is a partly finished division problem. What is the very next step?

$$\begin{array}{r} 2. \\ 23\overline{)54.0} \\ \underline{46} \\ 8 \end{array}$$

(a) Multiply 2 x 23.
(b) Bring down zero.
(c) Subtract 23 from 80.
(d) Move the decimal to the right.

It is not always useful to analyze student behavior into extremely small parts. However, it is often important that we think of all the skills which might be necessary to the student, because neglect of a crucial skill may cause the instructional system to limp or to fail. For example, the skill of understanding spoken English is very crucial to students' success in most American classrooms. Without this skill students do not work at a satisfactory level.

Exercise

What sorts of skills or aptitudes would you check on, if asked for advice about a second grade child who can't seem to learn to read? That is, what are all the skills needed before one can read?

Answers (Sample)

Eyesight, hearing, mental ability, health, home language, home environment (Do his parents read, are there any books or magazines around, etc.), does he "see" what you see, i.e. does he not confuse p, q, g, d, b, etc.

Exercise

Suppose you have investigated several reasonable alternate hypotheses about why the second grade child can't read. You have found he can't distinguish among the similar letters (p & q, d & b).

1. First: Write several test items which will tell you if new lessons to reduce the child's perceptual difficulty have succeeded.

2. Second: Outline a strategy to teach the child to distinguish between p & q and d & b.

Answers (Sample)

1. (Question to be read aloud, student to choose answers silently.)

   A. What does the duck say? _____

      1. quack
      2. puack

   B. If you fall into the water, you may _____

      1. drown
      2. brown

   C. The color of dirt is _____

      1. drown
      2. brown

   D. The mouse makes this noise _____

      1. speak
      2. squeak

   E. If a woman gets married, she is a _____

      1. pride
      2. bride
      3. bribe
      4. gride

(To be read aloud by student. Teacher records errors and correct responses.)

F. The brown duck said quack. The bride fell in the dirt; she hurt only her pride.

G. "Come quickly," said Don. "We need some black shoe polish."

H. That pretty queen can brag.

2. Give him a small set of letters and ask him to circle all the p's; go through all 4 letters this way. Then increase the number of letters and do it again. Next, use small words to get him to circle certain letters; go on to larger words. Let him practice with questions similar to those on your test. Finally, get him to read aloud.

Counting and Graphing: An Alternative to Writing Test Items

Some goals and their performance objectives can be evaluated by relatively simple observation techniques. One of the easiest ways to "see" what is happening (needs assessment) or has happened (evaluation) is to count and/or graph. A count sheet or graph gives a condensed picture of a large number of events. Counts and graphs have the following characteristics:

(1) Behavior being measured

(2) A time period.

Here is an example of counting:

A foreign language teacher wanted to evaluate whether her performance objective relating to students speaking in the target language during class was being mastered. Each student was given a tally card and instructed to "keep track" of how often he spoke during class.

Measurement in this instance was conducted by the students themselves and only involved the teacher at the point where she wanted to interpret the results.

Graphing almost naturally follows any counting procedure since a unit of behavior is already indicated along with a time period. In the example above, the actual performance objective specified the

behavior as "...speaking a sentence containing a subject and a verb..." Since the students were counting their behavior every day, we have the time period which could actually extend for the duration of the course. If this were the case we would be engaged in continuous evaluation during instruction. On the other hand, if counting and graphing were only done at the beginning and end of the course it would be assessment of needs and evaluation after instruction.

At the beginning of this chapter counting and graphing were used to evaluate whether one of the smaller objectives was being met. If you recall, it concerned assignments completed which were easily observed and counted. Other instances where counting and graphing would be appropriate include: number of learning contracts completed for a week or month, number of self-corrected assignments, pages or whole samples of creative writing, voluntary projects completed, and time spent in learning activities (in contrast to "goofing off").

Checklist for Writing Test Items

After analyzing a performance objective into all the skills needed to achieve it and devising test items or an observation procedure, you should check the adequacy of your measure. The following checklist aims at multiple-choice test questions in particular since they are so often used. But the suggestions are relevant to other ways of measuring performance as well.

1. Correct answer does not stand out by its length, extra-careful wording, underlining not used in other alternatives, or other feature unrelated to the behavior stated in the objective.

2. The correct choice (say of A, B, C, D) is not mostly in one place (first or last, for example).

3. There are no give-away items in which the choices or distractors are so trivial and obvious that nothing is being measured.

4. There are few, if any, trivial give-away distractors that change the chance (guessing) base of your test. That is, on a 4-choice multiple-choice question, the student should have one chance in 4 of a correct guess, but if one choice is a give-away he really has one chance in 3.

5. Grammar and sentence construction are clear to students.

6. There are no "tricky" items in which ability to answer correctly is dependent upon something not in the objectives (double negatives, etc.).

7. The items clearly relate to the behavior specified in the performance objectives.

How Evaluation May Become Part Of The Delivery System

Keeping track of the behavior we want to change is often easier to manage when it is part of the solution we design.

When assessing needs, we are concerned about getting an accurate picture of the behavior--that is, one which is not biased by the fact that the student knows he is being watched or by other changes in the student's environment which affect the behavior.

When we begin a solution we no longer need to be as concerned with these factors. This means that frequently the student can be involved in the solution procedure, and in fact, monitor himself.

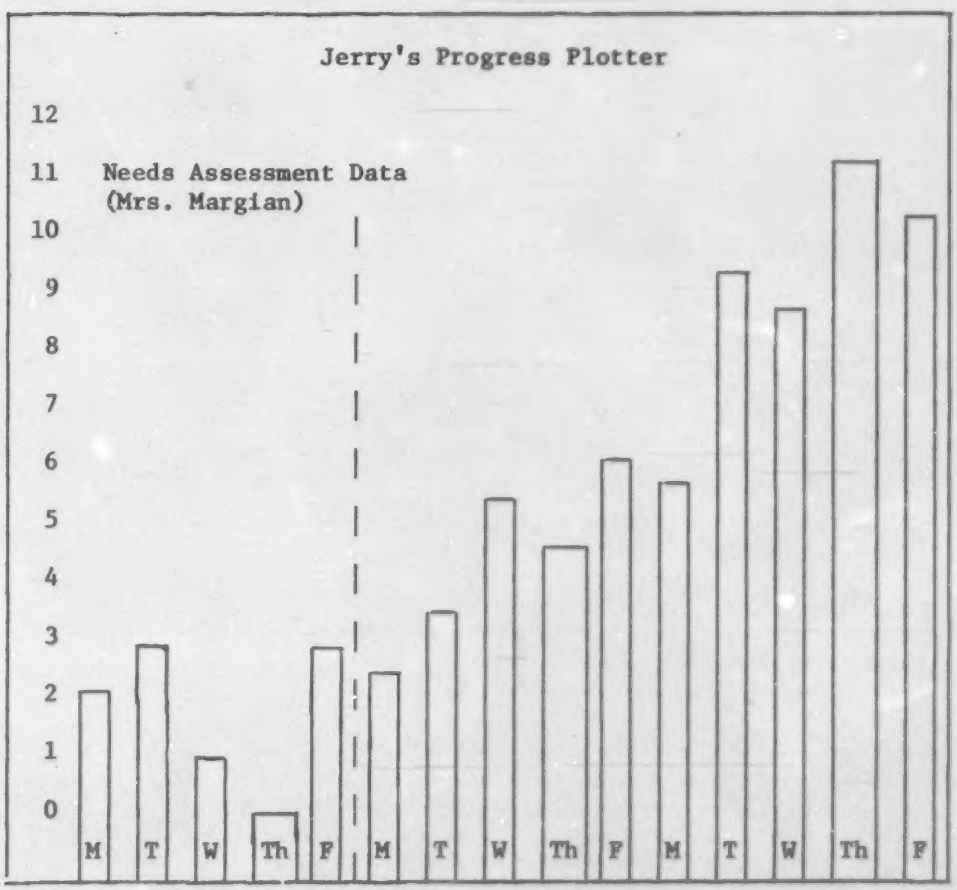
For example, Mrs. Margian was concerned about Jerry's poor work in arithmetic. He was usually playing with pencils or doodling and rarely got any of his problems correct. She identified an objective:

> Jerry will complete written arithmetic problems at the rate of 8 or more correct out of 12 assigned daily by the end of 3 weeks.

She did a needs assessment for one week, with twelve problems assigned each day, and she obtained the following data:

Number of Correct Arithmetic Problems by Jerry (45 Minute Periods)	
Monday	2
Tuesday	3
Wednesday	1
Thursday	0
Friday	3

The delivery system included a progress plotter. On the progress plotter, Jerry recorded each day the number of math problems he completed correctly:



We have suggested that periodic data gathering is the best way to get immediate feedback on the effectiveness of the solution. In Mrs. Margian's case, Jerry is doing the monitoring himself. Mrs. Margian can assess the success of her solution by merely passing by Jerry's desk and checking his workbook if she questions his data.

Immediate feedback and self-managed learning

One purpose of testing is to provide information to the student about what was learned and what was not learned.

There are a number of ways this might be done. Providing the answers to students immediately after the test is over is best. This can be accomplished by handing out the test key, by having students exchange and correct one another's papers (although this may be a poor social practice), by going over the answers in class, etc.

In addition to providing simple answers to the test, you may be interested in redirecting the student's study or review. The answer key to a test which maximizes feedback to students might look like the one below.

A test designed to maximize feedback to students:

1. When did Columbus make his voyage to America?

   Answer: 1492. If you got this wrong, see p. 86 in your Text.

2. What was the primary purpose of his voyage?

   Answer: To discover a water route to India, to find a cheaper way to get spices. If you got this wrong, see p. 87.

3. Was he successful in this regard?

   Answer: No. If you got this wrong, see p. 87.

4. Who sponsored Columbus' voyage?

   Answer: Queen Isabella of Spain. If you missed this, see p. 88.

5. What did most people think would happen to Columbus and his men?

   Answer: Most people thought that they would fall off the edge of the world. See p. 85.

Concluding Remarks

Evaluation is one of the most useful and powerful tools available to the classroom teacher. (1) The content of the evaluation method grows directly out of the performance objectives in question; therefore the evaluation instrument or method can be used for needs assessment as well as evaluation. In other words, the entrance and exit test can often be the same. (2) Evaluation provides access to information which indicates the usefulness and effectiveness of a delivery system relative to the established performance objectives. Thus, teachers have the information they need to recommend modification, replacement or maintenance of an existing delivery system. (3) Using evaluation information and the related performance objectives, students can be given specific information about the extent and areas of their competencies. (4) Designated "others," such as parents, employers, and the next teacher, can be given precise information about an individual student's competencies. (5) Finally, when evaluation indicates a successful delivery system, this system can be recommended to other teachers.

Throughout this chapter the emphasis has been on purposeful evaluation. Evaluation during instruction gives almost continual information about the effectiveness of the delivery system well in advance of the evaluation traditionally occurring only at the end. This alerts the classroom teacher to ineffective delivery system procedures early enough in the school year to make meaningful changes or recommendations

for an individual. Evaluation at the end of instruction produces the critical information about a student's competencies and the over-all effectiveness of the delivery system. Other practical aspects of evaluation covered in this chapter were: techniques to insure you test exactly what you teach; and techniques that help you write test items that test the skills needed to achieve performance objectives. "Tests" other than the traditional paper and pencil items were also suggested for instances where simple frequency of occurrence is the important information. A checklist was included on pages 71-72 that can be used for the development of test items for any performance objective or delivery system.

The chapter ends by showing that in some instances continual evaluation can become part of the delivery system while retaining its critical function of providing information about the effectiveness of the delivery system.

CHAPTER VI

APPLICATIONS OF THE ACCOUNTABILITY MODEL

Summary

This chapter shows accountability in action. Read it as a summary to the entire book. Three examples illustrate how the parts of the model interact in school settings to get results. The parts of the model are labeled as they are presented in each example. The examples are:

(1) Basic Reading Skills: Elementary School,

(2) Staff Development and Reading: High School,

(3) Reporting Student Progress: Middle School.

Basic Reading Skills: Elementary School

Perhaps the most important thing to notice in this example is that practicing educational accountability is not always a step-after-step process. Notice that the principal, parents and teachers began the process with an informal needs assessment and then moved to goals and elements of a delivery system. This was followed by a refined statement of performance objectives, a second and more detailed needs assessment and so on.

Notice that instruction could be individualized when detailed performance information was available for each student. Evaluation became part of the delivery system. The students actually managed part of the delivery system - the progress plotters. The progress plotters

put the reading teacher "in touch" with her students on a daily basis so immediate adjustments could be made in the delivery system when and where necessary.

First Assessment of Needs. Parents, teachers and a principal at an elementary school were noticing more students at each grade level who could not read well enough to do assignments in school or read outside of school.

Identification of Goals. They decided that the top priority goal for their school was basic reading skills for every child by the end of 6th grade.

Analysis of Delivery System. The most concerned parents wrote petitions to the superintendent and had several meetings with both the principal and superintendent. They requested and received an allocation for updated reading materials school-wide and the employment of a half-time reading teacher.

Performance Objectives. The reading teacher selected objectives she thought most important for enabling frustrated readers to read passages like those in school books. Here are some of her performance objectives:

> Word attack objectives: Each student who cannot sound out unfamiliar words from 1st through 3rd grade lists will, when given such words, say the beginning sound, the middle sound and the final sound. Words will be chosen to start or end with every consonant and will contain all vowels and simple vowel combinations. The teacher will be the listener. All words must be done correctly from the teacher selected lists before the student can begin comprehension lessons in self-selected books.
>
> Comprehension objective: Each student who can sound out unfamiliar words will have reading selections made by teacher on material with vocabulary that the student comprehends when listening. The student will read the material silently and say the answers to teacher-made questions about who, what, where, when and sequence. For a given vocabulary difficulty level, the student will answer with 75% accuracy after 1 month of instruction.

Second Assessment of Needs. Tests of the word attack and comprehension skills were given to each child. The reading teacher found that 2 students were able to read but just would not in regular classes. Seven students had word attack skills, but were weak in comprehension. The remaining students had few word attack and comprehension skills, but did have adequate listening vocabulary and listening comprehension for school work they were expected to do.

Analysis of Delivery System and Evaluation During Instruction. Different instruction was devised for the students' different sets of skills. For each student, a progress plotter was devised. For instance, students learning the sounds of consonants had a chart of the consonants and squares for each consonant to color in when a teacher-made test was accurately completed. Students working on comprehension had graphs on which they recorded their weekly rate of comprehension (reading rate multiplied by percent correct on a teacher-made comprehension test).

Evaluation. By watching students' progress plotters, the reading teacher was able to adjust assignments daily. Students advanced from letter recognition to sounding out words at their own rates. Others moved from reading primers to reading more difficult books. Not only their skills improved: they seemed to like reading more. They came on time more and more, asked for reading work to do between classes and checked out more and more books to take home.

At the end of the school year, 75% of the students had reached the criteria of the performance objectives written specifically for them.

Recommendations for Delivery Systems. For the money and effort spent, the reading teacher, other teachers, the parents and the principal recommended continuing the program until two things occurred:

1. The students still in the program showed comprehension skill sufficient for school work at their respective grade levels.

2. Individualization techniques developed by the reading teacher (delivery system) were adapted to classroom use throughout the school so new students would not need a special reading teacher.

Staff Development and Reading: High School

The most important new point in this example is the close relationship between the professional development of the teachers and improved learning in their students. Techniques of instructional design, or lesson development, were closely tied to improved student performance through frequent evaluation.

Identification of Goals. High school teachers at one school were worried by the number of students who dropped out unable to read or who held back classes because reading was so difficult for them. None of the teachers had training in teaching reading. No money was available for a reading consultant unless one or two teachers were dropped from the staff.

Performance Objectives. They decided to do something about improving their own reading instruction skills. From a collection of basic reading objectives they selected 10 which seemed most relevant for their students. A 50 item test was developed from test items published with the objectives.

Assessment of Needs. The objectives were given to students so they could decide whether to participate or not. The project was voluntary and described as an experiment in reading. Only students who missed more than 1/2 the test were allowed to attend two half-hour sessions per week.

Analysis of Delivery System. One teacher prepared and conducted a lesson aimed at one of the objectives. Another teacher observed the lesson. Five students were in each session.

Evaluation. A post-test on the objective was the basis for discussions after the lesson.

Recommendation for Delivery System. During these half-hour discussions, suggestions for better reaching the objectives were translated into revised lessons which a teacher could try out the following week.

By these means, each of 30 teachers was able to:

develop his or her own lesson,

help develop a lesson with a colleague,

help 10 students learn a reading skill, and

demonstrate commitment to improving each student's reading skills.

Reporting Student Progress: Middle School

Educational accountability can be directed toward the parents of the children in your classroom. In this example improved learning was not the main issue. The goal was to communicate student progress and reduce parental complaints about the reporting form. The steps in the accountability model served as a problem-solving technique.

Identification of Goal. The principal of a middle school (6-8 grade) wanted more parent approval and understanding of the ways student learning was evaluated.

Performance Objectives. In particular, he wanted:

1) Clearer ways to communicate student progress to parents. Parents should be able to summarize their child's progress during a reporting period using the information on the reporting form following a conference with the teacher. Teachers would judge the adequacy of parent summaries.

2) Fewer complaints and more compliments from parents about the reporting forms over the course of the school year as shown by answers to a short questionnaire given three times during the year (after each reporting period).

Analysis of Delivery System. A form for reporting student progress was developed by the teachers of each subject: Language Arts, Math, Social Studies and Science. The major features: 1) goal areas were labeled, 2) main performance objectives were indicated, 3) intermediate points of progress (smaller objectives) were shown with spaces for recording dates of student mastery.

Evaluation and Recommendations for Delivery System. Parents were able to summarize children's progress. They welcomed the effort. They liked the breakdown of subject matter into main objectives and intermediate points of progress. They said that student progress was clear over the year. They asked for the following changes:

1. Parents wanted a comparison between their own child's progress and other children's progress. One suggestion was to compare # of objectives mastered by each child to the total # of objectives mastered by the students in classes taking the same subject.

2. Parents wanted to meet with teachers to set goals and objectives for their own children at mid-year.

Concluding Remarks

Now you have seen the educational accountability process in several school situations. Though its main thrust is to improve student performance, these examples show how it can also help in staff development and communicating with parents.

For accountability to work, it must be used by you. This book tried to make it useable. Try it.